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16 May 1967

MEMORANDUM**SUBJECT: Photographic Detection of Offensive
Missile Systems in North Vietnam**

1. General: It would be difficult to detect in photography the introduction of offensive missile systems into North Vietnam under the present reconnaissance program. Photographic coverage is irregular, spotty, and of widely varying quality. Thus, it would be hard to make an early positive identification of a short-range, mobile missile system, particularly if the components of such a system were mixed with other tracked vehicles, trucks, and construction equipment. The same can be said for the more complex medium-range missile systems if the individual pieces of ground support equipment were not seen with the missiles, if the missile equipment was not seen in a pattern characteristic of a missile unit, or if the missile equipment was well-camouflaged or in novel site configurations. The weather conditions that prevail in North Vietnam much of the time make it difficult to obtain frequent area photographic coverage with high-altitude collection systems.

Coverage Requirements

2. The primary requisite is, of course, nearly complete coverage of North Vietnam with particular attention to those priority areas where the emplacement of offensive missile systems is considered most likely. In order to detect any introduction of offensive missiles as quickly as possible--while in transit--thorough coverage is required of the important rail transloading yards of Pinghsiang and Kungming in China, the numerous marshaling yards and spurs in the North Vietnam rail system and the port of Haiphong.* We do not, at present, have such


*With the completion of a standard gauge rail line from Pinghsiang in China to Kep in Vietnam and from Kep to Thai Nguyen, much freight can now be brought to these areas without transloading.

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coverage although it should be noted the reconnaissance effort has been directed primarily in support of bomb strikes (i.e. pre and post strike photography) the detection of new SAM sites, updating of OB at known military installations, surveillance of key indication targets and lines of communications. A second requirement is that the coverage must be repetitive in order to ensure the timely detection of the introduction of offensive missile systems. This is essential in order that new activity or changes in the nature of previously observed activity can be detected promptly. A third and equally important requirement is adequate resolution to identify different types of missiles or missile-associated equipment.

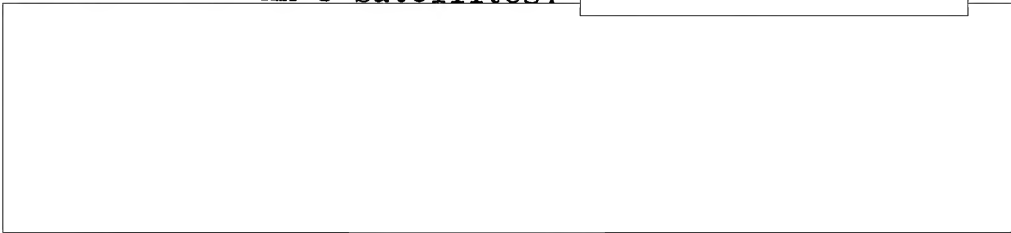
50X1
50X1

Current Coverage

3. Following is a brief review of the limitations of current photography on North Vietnam obtained by the various reconnaissance vehicles since 1 January 1967 (see attached map which depicts coverage by the various reconnaissance systems).

A. Satellite Coverage

High resolution is currently being provided by the KH-7 and KH-8 satellites.

50X1
50X1

The lower resolution KH-4 missions are capable of providing the necessary complete small-scale coverage of North Vietnam since a photography strip covers an area approximately 160 miles wide. Experience has shown, however, that only about one KH-4 mission a year--they are launched about once a

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month--finds North Vietnam sufficiently cloudless to obtain adequate over-all coverage of the country. The quality of KH-4 photography would generally permit the detection of a missile site of standard configuration, but better resolution would be required to identify missiles or missile-associated equipment and to detect a well-camouflaged site or one of a novel configuration.

B. High Altitude U-2 Coverage (Trojan Horse)

This reconnaissance aircraft, with any of its camera systems, is capable of providing the required resolution to identify missiles and missile-associated equipment. Since the introduction of surface-to-air missiles into North Vietnam in 1965, however, these aircraft have not been flown within the lethal range of known SAM emplacements. This has generally confined U-2 photography to the northwestern portion of North Vietnam. Of the 67 missions flown over south-east Asia this year 37 were over the northwestern portion of North Vietnam and Laos. Considerable cloud cover prevented us from obtaining much usable photography of that part of North Vietnam on any one mission.

C. Combat Reconnaissance Coverage

These missions range from high level (30,000 feet) to low level (500 feet) with the majority between 5-10,000 feet. The quality of this photographic coverage ranges from excellent to poor. NPIC reports that they received photography from an average of 800-900 of these missions a month during 1966 and 750 a month this year. About 20-25 percent of these, however, are flown to produce infrared or side-looking radar imagery--a product that cannot generally be applied to this problem, although it is useful to the tactical commander for other purposes. The coverage of North Vietnam by combat tactical reconnaissance aircraft has been primarily directed toward strike operations and the indicator targets. As a consequence, over-all coverage has been limited and it consists of short film strips covering major road and rail segments, point targets such as the Thai Nguyen Iron and Steel Complex and other strike targets. The shortness of the flight lines and the narrow band of lateral coverage because of the relatively low altitude of the reconnaissance

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aircraft, although responsive to strike requirements, result in numerous gaps in photographic coverage in areas where offensive missile systems might be deployed. Further, at the present time, tactical reconnaissance aircraft are prohibited from flying the sanctuary or buffer area--that part of North Vietnam within 20 miles of the Chinese border where strikes are not authorized.

D. Drone Coverage (Blue Springs)

Low-level drones--24 have been recovered thus far in 1967--are flown at 1,500 feet and provide excellent quality photography. The low altitude of the drone, however, restricts the usable photography to approximately one mile on either side of the flight line. These missions are directed primarily against high-priority targets in the Hanoi and Haiphong areas.

The high-level drone--five out of 12 have been recovered this year--are flown at an altitude about 60,000 feet. This drone is vulnerable to the SA-2 missile, although in a few instances it has been successfully utilized in the SA-2 envelope. Most of the high-level drone missions have been programmed to cover the eastern portion of the China/North Vietnam border and in the buffer zones where tactical aircraft do not operate. These missions, however, have not provided any usable photography of that area this year, largely because of unfavorable weather. High-level drone photography is capable of providing identification of missile or missile-associated equipment under optimum operational and weather conditions.

Priority Search Areas

4. The priority missile search areas delineated on the attached map (see map and explanatory notes) are a slightly modified version of the ones first established by the LOOKOUT Task Force over a year ago. These areas are receiving further study. In general, our major considerations for establishing priority search areas--particularly for fixed-site medium-range missiles--were the availability of adequate road nets and the suitability of terrain for the emplacement of the site and for making or camouflaging it. A

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secondary consideration was the availability of air defense protection with such weapons as the SA-2 surface-to-air missile.

5. This memorandum has been prepared jointly by the Central Intelligence Agency and the Defense Intelligence Agency with the assistance of the National Photographic Interpretation Center.

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**PHOTOGRAPHIC COVERAGE
NORTH VIETNAM
1 JANUARY-30 APRIL 1967**

BURMA

C H I N A

KH-4
ONE MISSION--BASICALLY
CLOUD-FREE--RESOLUTION
NOT GOOD ENOUGH FOR
THIS PROBLEM

37 MISSIONS--
MUCH OF PHOTOGRAPHY
COVERED BY CLOUDS

COMBAT RECONNAISSANCE
BLUE SPRINGS
HIGH LEVEL
LOW LEVEL
TROJAN HORSE
KH-4
KH-7

THAILAND

LAOS

VIETNAM

NORTH

SAM NEUA

HANOI

HAIPHONG

VINH

THANH HOA

RED RIVER DELTA

DONES (HIGH)
NO USABLE PHOTOGRAPHY
FROM FOUR FLIGHTS DUE
MOSTLY TO HAZE AND
CLOUDS--NO PI REPORTS
ISSUED

DONES (LOW)
QUALITY GOOD BUT
COVERAGE EXTREMELY
NARROW

COMBAT RECONNAISSANCE--
AREAS GENERALLY
COVERED--PHOTO STRIPS
GENERALLY SHORT AND
OF VARIABLE QUALITY.

DEMARCATION LINE

DONG HA
QUANG TRI

NPIC L-3138

50 0 50 100
NAUTICAL MILES

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NORTH VIETNAM

- MRBM search areas
- Shaddock missile search area
- Shaddock and Scud missile search area
- Samlet coastal defense missile search area

0 25 50 75 Miles
0 25 50 75 Kilometers

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NAMES AND BOUNDARY REPRESENTATION ARE NOT NECESSARILY AUTHORITY

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ANNEX

Rationale for Selecting Search Areas for MRBMs in
North Vietnam

Priority 1: This area--a short distance north and west of Hanoi--is given first priority because it already has excellent SAM and AAA defenses and good interceptor defenses, good rail and road facilities, forested areas for concealment, and suitable plain to hilly terrain.

Priority 2: This area along the rail line from Hanoi to China is given second priority because of the rail transportation available and its location well inland and behind a barrier of SAM, AAA, and interceptor defenses. It also has extensive forests for concealment and large areas of suitable terrain.

Priority 3: This area well north of Hanoi is given third priority because of its rearward position, good roads, extensive forests for concealment, and generally suitable terrain. This is the best area for defense by Hanoi's interceptors. Much of the northwestern part of this area is too mountainous to be suitable.

Priority 4: Two areas have been assigned fourth priority: a strip of hilly country along the Moc Chau - Lai Chau road in the northwest, and a strip along the northeastern coast from Haiphong to the Chinese border. Except for the SAM-defended Haiphong vicinity, these areas would be difficult to defend from air attack. They have good roads, and offer generally suitable terrain and good opportunity for concealment.

Rationale for Selecting Search Areas for Tactical
Missiles

The areas for these missiles were selected entirely on the basis of weapons range.

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